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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/612,385

07/02/2003

Kazushige Hotta

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06/30/2004

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EXAMINER

HU, SHOUXIANG

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 06/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/612,385

Applicant(s)

HOTTA ET AL.

Examiner

Shouxiang Hu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 1-15, 17-20, 22, 23, 25 and 26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16, 21 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 07-02-03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 1-15, 18-20, 22 and 23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 22, 2004.
2. In addition, claims 17, 25 and 26 are also withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being unreadable on applicant's elected specie of Figs. 10A-10D. These claims, being directed to a device, depends on claim 14 that recites the subject matters of the second insulation film being formed on each of the LDD regions and the source/drain regions. However, according to Fig. 10D, the second insulation film (67a) remaining in the device therein is on the LDD regions, but not the on the source/drain regions (647).
3. Accordingly, claims 1-26 are pending in this application; and claims 16, 21 and 24 remain active in this Office action.

Drawings

4. Figures 11A-18B are objected to as they should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled

"Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claims 16, 21 and 24 are objected to because of the following informalities and/or defects:

In claim 16, line 11, the term of "same" should read as: --gate electrode--.

In claim 16, line 13, the term of "the impurity" should read as: --additional impurity--.

In claim 16, line 15, the term of "the impurity" should read as: --the additional impurity--.

In claim 21, the term of "the laser light" lacks sufficient antecedent basis.

Claim 24 recites the subject matter that the thickness of the second insulation film is determined based on the thickness of the first insulation film. But, it is indefinite as it fails to clarify that it is determined based on the reflectivity of the combined thickness of the two insulation films under a specific wavelength of the laser light used to activate the doped impurities.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 16, 21 and 24, as being supported by the elected species, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The subject matters recited in claim 16 imply that there are two insulating layers, including the recited first insulation film and gate insulation film, disposed between the recited gate electrode and the semiconductor layer. However, according to the elected species of Figs. 10-10D, there is only one insulation film (65a) between the gate electrode (66a) and the semiconductor layer (642).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claim 16, insofar as being in compliance with 35 U.S.C. 112, as being supported by the elected species and as being best understood in view of the claim objections

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above, is rejected under 35 U.S.C. 102(b) as being anticipated by Applicant's admitted prior art ("AAPA").

AAPA discloses a thin film transistor device (Figs. 12A-12B; and see pages 5-7 of the instant specification), comprising: a semiconductor layer (9221 and 9232) having a predetermined configuration formed on a substrate (920); a first insulation film and/or a gate insulation film (924) formed on the semiconductor layer; a gate electrode (925a); low density impurity regions ("LDD" regions 9236) formed by implanting an impurity of the first conductivity type in the semiconductor layer; a second insulation film (926a) formed on the LDD regions as a mask layer for implanting additional impurity of the first conductivity type in the semiconductor layer; and source and drain regions (2935) formed by implanting the additional impurity of the first conductivity type in the semiconductor layer using the gate electrode, the gate insulation film, and the second insulation film as masks.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 21 and 24, insofar as being in compliance with 35 U.S.C. 112, as being supported by the elected species and as being best understood in view of the claim

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objections above, are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art ("AAPA").

The disclosure of AAPA is discussed as allied to claim 16.

Although AAPA does not expressly disclose that the second insulation film and the gate insulation film can be formed of a same material so as to have combined thickness that minimizes the reflectivity during laser annealing, one of ordinary skill in the art would readily recognize that silicon oxide can be readily and desirably used for both of the gate insulation film and for the cap layer on the gate so as to have a combined thickness for the two layers to minimize the reflectivity during laser annealing in the doped regions and to maximizing the reflectivity at the gate region, as evidenced in Furuta et al. ("Furuta"; US 6,309,917; see the cap layer 16 in Fig. 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device of AAPA with the second insulation film and the gate insulation film therein both being made of silicon oxide and having a combined thickness that minimizes reflection during laser annealing, as taught in Furuta, so that a thin film transistor device with better activated impurity in the doped regions and with better protected gate/channel regions would be obtained.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References B-E and N are cited as being related to a TFT device structure.

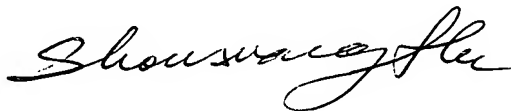
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SH
June 24, 2004



SHOUXIANG HU
PRIMARY EXAMINER